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USSR Report

TRANSPORTATION

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CIVIL AVIATION

ADMINISTRATION CHIEF ON AIR TRAFFIC CONTROL IMPROVEMENTS

Moscow GRAZHDANSKAYA AVIATSIYA in Russian No 3, Mar 84 pp 30-31

[Article by A. Kolesnikov, chief, Air Traffic Central Administration: "Air Traffic Control Must Take All Factors into Account" under the heading: "Matters of Flight Safety"]

[Text] It is difficult to overrate the role and importance of air traffic control because the safety, promptness, and economics of flight, in many respects, depends on its precise and well-coordinated operations.

The problem of improving air traffic control is being solved comprehensively on the basis of careful analysis and calculation of many factors. In recent years alone, a whole series of measures have been carried out to raise the efficiency and quality of controlling the movements of aircraft.

An important stage in this multifaceted work is the creation in our country of a unified system of air traffic control which has permitted liquidating the territorial separateness of air traffic control units, improving their organizational and functional structure, increasing the operativeness and reliability of cooperation, and assuring the efficient use of airspace and of the radio engineering systems provided for flights.

Also of great importance is the introduction of automated systems and supplying the traffic control services with modern radio engineering equipment; namely, secondary radar, unified air traffic controllers' consoles, and air traffic controllers' training equipment. For instance, the "Start" automated airfield system already has been introduced at the Leningrad, Sochi, Rostov-na-Donu, Kuybyshev, Simferopol, and other large airports. Before the end of the Five-Year Plan, it will have gone into operation in Khabarovsk, Novosibirsk, Irkutsk, Yerevan and Volgograd. Automated air terminal and air routing systems have been successfully introduced into the operations of the air traffic control services.

Experience clearly demonstrates the advantages of the automated systems. Their use not only increases the throughput capacity of the airspace in the air traffic control zones and regions, but reduces the load on the air traffic controllers and, most importantly, increases the reliability of control.

Each of the systems introduced has permitted saving about 10,000 tons of aviation fuel annually by improving the daily and current planning, by reducing the length of time aircraft stay in holding patterns, and by selecting optimum flight paths.

Experience in the operation of the "Start" automatic air traffic control system, for instance, at the Pulkovo airport, showed that the new system not only increased the operational capabilities of the air traffic controllers by automating the process of assembling, storing, processing and displaying data about aircraft and their movements, but beneficially influenced the productivity of their work because of the improved working conditions (normal lighting in the control room, the combining into one indicator of all the kinds of information, and the freeing of the air traffic controller from the conduct of data gathering communications, and so on). In a word, according to the testimony of aircraft crews, air traffic control in Leningrad airspace is significantly better when compared with other airspace not having the automated systems.

The airports of Kharkov, Borispol, Lvov, Sochi, and Minsk will be fitted with secondary radar. In the near future, new tracking radar complexes will be installed at the Kiev, Novosibirsk, Krasnovarsk, Khabarovsk, Simferopol, and other airports. Landing radars with improved characteristics will be going into service. The air traffic control service and Aeroflot's educational establishments also will receive the air traffic controller training devices "Trener" and "Stazher".

In recent years, in worldwide and domestic practice, the problem of organizing the flows of air traffic and planning and scheduling them has acquired great importance. These matters began to be solved for the first time in the Moscow AUVD [Automated Air Traffic Control] center. Using computer complexes and on the basis of schedules and plans for flight (in accordance with the established criteria of throughput capacity) the planning of flights into Moscow is being carried out. For Aeroflot, however, the matter of controlling the flows of traffic both into individual zones and as a whole, remains one of the burning questions. Many problems require solutions; namely, the automation of the processing and receipt of data, the widespread use of computer centers, the establishment of the principles for regulating traffic flows, and also the interaction of the different points in their controlling.

Nevertheless, even considering further augmentation of the air traffic control system with the latest radio engineering equipment, the main link in the operation of the system will remain the person--the air traffic controller. Even today it is customary to say that the personal factor plays a fundamental role in raising the quality of air traffic control. Even the most perfect organization and the most modern equipment will turn out to be ineffective if an insufficiently trained and undisciplined air controller is at the control console. That is why the most intense attention is being paid to raising the professional, ethical and political level of the workers in our service, both in their training at educational establishments and directly at aviation enterprises.

But even here there still are unutilized resources. Thus, in our view, a definite restructuring is required of the system of training air traffic controllers in the educational and training subdivisions of civil aviation. Special attention also should be given to technical training and systematic work in the traffic control service.

There are many examples of the exemplary work of the air traffic control service. For instance, the air traffic control service collectives of the airports of Pulkovo, Vnukovo, Zhulyani (Kiev), Sochi, and others have been working for a protracted time without irregularities. This became possible thanks to the excellent professional training of the majority of the specialists, the solid discipline, the good organization, and the orderliness in the shifts and at the work places of the air traffic controllers.

In providing for the well-ordered and precise operations, a decisive role belongs to the flight supervisors who are the principal organizors and teachers in a shift.

Take for instance the collective of air traffic controllers of the Leningrad Pulkovo airport. The flight supervisors here are high-class specialists. The majority of them are people of higher education and much experience. But their strength is not only in knowledge and experience. In the first place, these specialists have a high sense of responsibility for and love of their profession. The personal example of the veterans Yu. Murkin, and A. Toporkov and others impels young controllers toward perfection and to become proficient in air traffic control. They generously share their experience with the young people and constantly look after their progress.

Flight supervisors P. Butkus (Vilnius), D. Moiseyev (Vnukovo), V. Shvedov (Tolmachevo), V. Smirnov (Riga), and many others also are examples of self-discipline and professional training.

The first assistant flight supervisors are the older air traffic controllers and controller-instructors. They organize orderly work in a shift, conduct the professional training of the controller trainees, give clearance for independent work by young specialists and monitor their work. The controller instructors have a great role in assuring the safety of flights and in strengthening the discipline in the shifts. Not accidentally has the experience of the best of them such as F. Terekhov (Far East Administration), V. Rodionov (Ukrainian Administration), K. Katargin (Moscow Transport Administration), V. Ivanov (Kazakh Administration), V. Osipov (East Siberian Administration), and L. Uglanov (West Siberian Administration), received widespread dissemination in the industry.

The on-the-job training of future young specialists proceeds interestingly and purposefully at Belorussian air traffic control as an example. The professional training of the graduates of the flying and engineering schools is carried out on a base of the Minsk and Gomel airports in zones where there is the most intense air traffic. The chiefs of the regional air traffic control centers, the flight supervisors, and the experienced controller-instructors guide the on-the-job training. All this permits attentive sizing-up of

the trainees and permits an objective determination of their knowledge, ability, and inclination for the purpose of their subsequent appointment to one or another work place.

In our opinion, the practice of individual work and individual assignments deserves attention. In the air traffic control services of the airports of Lvov, Tashkent, and Ufa, the flight supervisors, after this individual work have a talk with each of the young air traffic controllers and they find out the level of his preparation and give him a specific assignment for self-training. The assignment is given in written form. The young air traffic controller then makes a report on it at the time of technical training. The whole collective thus follows up and consolidates knowledge on some matter. All reports and individual test assignments of the young controllers are kept in the technical classes and serve as a reference manual for his class.

Unfortunately, there still are cases when the on-the-job training and introduction into service of young specialists is carried out with a lack of interest and at a lower level. Occasionally, those responsible for the practice - the chiefs of the air traffic control centers and flight supervisors; that is, those who should be most interested in increasing the professional mastery of the young controllers - turn this matter over to little-qualified workers. Such were the facts in the air traffic control services of the Yakutsk, Magadan, Eastern Siberian, and Kazakh air traffic control centers.

High-quality supervision of a shift is impossible without constant evaluation of the degree of preparedness and the correctness of the actions of all executives and also the operations of interfacing services. A flight supervisor must constantly assemble information about errors which have been committed and know how to analyze the information and to plan specific ways to improve the quality of the work of the shift and to prevent errors. Many flight supervisors do this. In particular, interesting work experience has been accumulated in the air traffic control services of the Ufa and Volgograd airports. Here, in reviews in the shifts, they use information from the decoding of flight data including magnetic tape records, photographs, graphs, and so on.

In a word, it is necessary to work constantly with the people, to educate every specialist in air traffic control in the responsibility for carrying out his official duties, in undeviatingly perfecting his skill, and to inculcate in him a sense of pride in his profession.

In this, one of the decisive conditions of success in our work, is our contribution to the realization of the December 1983 Plenum of the CPSU Central Committee.

9136
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CIVIL AIR CODE INTERNATIONAL FLIGHTS SECTION EXPLAINED

Moscow GRAZHDANSKAYA AVIATSIYA in Russian No 3, Mar 84 pp 32-33

[Article by Candidate of Juridical Sciences A. Zinevich: "International Flights" under the heading: "The USSR Civil Air Code - The Law of Life for the Aviator"]

[Text] Chapter VI, "International Flights" of the new USSR Civil Air Code, is relatively small - in all there are eight articles in it. Nevertheless, it is extremely important since it establishes the bases for Soviet aircraft to make flights beyond our borders and for flights of foreign aircraft into the USSR. Therefore the protection of our country's interests in the field of international transportation, in many respects, depends on the correct interpretation and application of this chapter of the code.

From the first years of Soviet rule, most intense attention has been paid to the questions of international flights because of their intimate connection with both economic and political interests. The growing volume of flights into and out of the USSR had an important influence on the content and development of the pertinent legislation.

In 1921, when the first such legal document was adopted; namely, Lenin's decree "On air travel", such flights were only beginning.

It is fully explainable, therefore, that the decree regulated only occasional flights of foreign aircraft over USSR territory and did not even contain a definition of international flight.

In thirty years the number of flights beyond the border grew. In 1932, the chapter "International Flights" containing 14 articles was inserted in the civil air code. The same number of articles was retained in the civil air code of 1961. This alone - the preservation of the quantitative proportion of the normative material - testified to the continuity of the general standardizing institutions.

Although the intensity of international flights into and out of the USSR is significantly less than the intensity of internal flights, it has increased steadily. Before World War II the Soviet Union had regular air communications (some of them unilateral) with Germany, Sweden, Czechoslovakia, Iran,

Afghanistan, Mongolia, and China. In the postwar period international flights have been developing at an accelerating rate. By the time the civil air code of 1961 was adopted, our country had a rather extensive system of air transportation.

At present, Soviet civil aviation has a still more branched-out network of international airlines. In the modern stage of its development, Aeroflot is the largest airline company in the world. It is fitted out with the last word in science and technology, and is playing an important role in the worldwide system of air transportation. Despite recent aggravations provoked by the bellicose attitude of imperialism, our air communications with many countries continue to develop successfully.

Being members, the Soviet Union in the years 1981-1983 participated in more than 40 actions conducted by the International Civil Aviation Organization (ICAO). Our rich experience in the field of making aviation equipment, of developing air transportation, and of developing special modes for the application of aviation in the national economy, and also in the field of the legal regulation of air transportation takes its stand through the ICAO along with the contributions of many countries.

Right now Aeroflot is making regular flights to 118 cities of almost 100 countries. Our country's airports are receiving the airliners of 28 foreign airlines. In 1981 the first Soviet wide-bodied aircraft, the IL-86, went out onto Aeroflot's international routes.

In view of the recent intensification of air travel, provisions for the safety of international flights and a number of other matters have acquired special importance. All of this required painstaking work on the project of the civil air code as a whole and, in particular, on the chapter on international flight.

The concept of international flight itself has been repeated almost word for word from the earlier code, and it is defined as "flight in which an aircraft crosses the state boundaries of the USSR and of other countries. An addendum to this definition would seem trivial as it is shown that it serves the purpose of the present code and has very great importance. The code thereby clearly outlines the sphere of application of the regulation. And actually, if the articles of the sixth chapter are analyzed carefully, all their provisions are connected in one way or another with the territory of the USSR.

As is known, the instructions for making flights (NPP GA-78 [Instructions for Making Flights Civil Aviation-78]) contains another definition; namely, "International flight is any flight of an aircraft in the airspace of more than one country". There is no contradiction here, however, with the definition presented in the civil air code. It is simply that the NPP and the code are documents of different juridical force. Aeroflot crews during flights between foreign countries are guided by the definition of international flight given in the NPP instructions.

The operation of the civil air code extends to all USSR aircraft outside of our country only in those unusual cases where local laws allow this (see article 3 of the code). At the same time, some regulations of the NPP GA have to do with rights and obligations of the crews and representatives of Aeroflot abroad which cannot be regulated by foreign legislation.

In any case, a flight of Aeroflot aircraft over the open sea without entering a foreign country is not considered as international. In this situation, only the laws of our country apply to a Soviet aircraft.

Definite difficulties can arise in the interpretation of the second part of article 66 which runs as follows: "In international flights of USSR civil aircraft in USSR airspace, and also of foreign aircraft, the general provisions regulating the flight and operation of aircraft in the USSR apply along with the changes and supplements listed in the present chapter and in the laws for the flight of foreign aircraft in USSR airspace as issued by competent Soviet bodies and published in the Collection of Aerial Navigation Information".

It is not difficult to ascertain the volume of the "general provisions". These are the provisions of the Law on the State Boundary of the USSR, the Principal Laws for Flights in USSR Airspace, and any other legislation or official regulation issued in our country. It is more difficult to make out exactly what regulations of the fifth chapter of the code, "Flights of Aircraft", are applicable to international flights. With careful analysis it turns out that almost all articles in the fifth chapter apply either fully or partially in this situation. They apply fully when they are the definite norms on the boundaries of USSR territory and they can be applied to Soviet and foreign aircraft in equal measure, and to crews and legal entities (see articles 42, 43, 48, 49-53, 59-65). They apply partially when a norm of regulation relates only to Soviet aircraft. For example, the second part of article 40 specifies that: "the rules for the preparation for flights, and the group of persons responsible for the preparation of them, are established by the ministries, state committees, departments, and organizations to whom the aircraft are available". It is obvious that Soviet legislation is not justified in regulating the rules for the preparation for flights of the aircraft of foreign owners.

As already noted in one of the previous issues (GRAZHDANSKAYA AVIATSIYA No. 10 1983), in accordance with the code, only that USSR civil aviation which is under the jurisdiction of the Ministry of Civil Aviation [MGA] is considered to be Aeroflot. On the matter of international flights, however, the functions of the MGA are broadened. Thus, in accordance with article 67 of the code, not only Aeroflot aircraft, but all "USSR civil aircraft carry out international flights with the permission of the Ministry of Civil Aviation issued in the established manner."

Of course the permission of the MGA alone is insufficient. Remember that such flights are carried out in observance of the USSR's international agreements or in observance of special permission for making one-time flights which are issued in an established manner by the competent bodies of other countries. A similar provision is affixed to the code in article 68 which regulates the international flights of foreign aircraft in USSR airspace. The direction of the previous code to the agreements on air transportation concluded by the USSR with foreign countries has been omitted. Keep in mind that such agreements are or can be a modification of the international agreements of the USSR on the basis of which flights into our country are made.

Inasmuch as article 68 deals with the flights of any foreign aircraft (not only civil aircraft), the direction to the fact that the Ministry of Civil Aviation issues permission for special one-time flights also has been excluded. A clause "issued in the established manner" takes into account those cases when the MGA does not issue the permission.

At the same time, the right to determine the conditions for assuring the liability of foreign aircraft owners for causing harm to third parties is granted expressly to the Ministry of Civil Aviation. This is based on the fact that the MGA has adequate experience in insurance matters or other provisions for liability. The requirement about the necessity of insurance or other provision for liability is new in the law and did not appear in the former codes.

The provision of the previous code that flights of foreign aircraft into USSR airspace are carried out only along established international air routes has been retained. In addition an important new supplement has been added: "if a different procedure has not been established by a competent Soviet body". This means that "a different procedure" is introduced only as an exception. For aircraft not having appropriate permission, deviation from international routes is not permitted.

The flight of Soviet and foreign aircraft out of the USSR and also their landing after flying into the USSR is done at airports or airfields where there are border-guard control and admission points and customs facilities. A different procedure for flying out or landing is permitted only according to authorization by competent Soviet bodies. In this, the regulations of the Law on the State Boundary of the USSR have been reprinted in the provisions of article 71 of the code.

The completion of the administrative formalities (passport, customs, currency, health, and others) is an important condition for making international flights. The general requirements for them which were contained in the 1961 civil air code had demonstrated their effectiveness and were retained practically in full. These requirements are applied in full not only to aircraft but to the crews and passengers arriving in the USSR and also to property carried into the USSR on aircraft.

Retained in the new law are the regulations regarding the acceptance of the aircraft documentation of foreign civil aircraft. The documents are accepted as effective in the territory of the USSR if they conform to the legislation of the state registration of aircraft (article 72). A problem can arise, however, in relation to the certification of the airworthiness of an aircraft. According to article 21 of the code the indicated certification is accepted as effective in the Union of Soviet Socialist Republics under the condition that the requirements in accordance with which it was issued or which gave it validity, satisfy the requirements established in the USSR. Here there is a seeming contradiction, however, in the normative institution. In article 21 there is the question about a formal state acceptance of certification in cases when, for instance, an aircraft was purchased abroad and has an effective certification. Its certification is sufficiently acceptable not to issue a new certification. The provisions of article 72 go into current verification of the completeness and correctness of aircraft documentation. In this case it is clear that there is no necessity in state legislation for acceptance of its validity.

The concluding article of chapter six of the civil air code, which was not included in the former code, specifies that aviation enterprises whose aircraft make international flights from USSR territory, into USSR territory, or in transit across USSR territory, in making such flights must take all necessary measures to prevent or stop illegal interference in civil aviation activity.

Based on the attempts at hijacking of aircraft by criminal elements, this regulation is for the purpose of ensuring that on any aircraft strict measures for the prevention or stopping of crime have been taken. With connivance, those strict measures for safety which are being taken in all the airports of our country can turn out to be inadequate or ineffective to trespassers.

A similar regulation is contained in the legislation of a whole series of countries. Many of them specify large fines for such trespassers.

On the whole, the chapter on "International Flight" reflects all the modern trends and also contains requirements setting forth both the conditions for obtaining the right to international flight and its realization. The latter circumstance is especially important for protecting the country's interests and for safety.

The provisions of the chapter "International Flight" in the near future will give a basis for the development of a system of law containing more comprehensive regulations relative to the rules for international flight over the territory of our country.

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LEAD SHORTAGE HASTENS NEED FOR IMPROVED STORAGE BATTERIES

Moscow MATERIAL'NO-TEKHNICHESKOE SNABZHENIYE in Russian No 1, Jan 84 pp 21-23

[Article by M. Karpunin, candidate of economic sciences and V. Bogorodskiy, engineer: "On the Basis of a Nationwide Standard"]

[Text] Moscow--Every year the production of cars, tractors, combines, and motorcycles grows. And the need for batteries, without which not a single means of transport with an internal combustion engine can operate, increases accordingly. In order to satisfy these requirements, many are made at electrotechnical industry enterprises. At the factories, new technology for battery production is developed and introduced, battery quality is raised, and the service life is increased.

However the requirements of the national economy for chemical sources of electrical current, especially lead, are not being completely met. This is explained primarily by the lack of sufficient metal. It is important to use this most important material resource rationally.

A necessary condition for the economical use of lead is the development and introduction of new technical solutions, with the organization and perfection of lead battery production technology making maximum use of the achievements of advanced science. Specifically, the application of fine electrodes, polypropylene and polyethylene for the case parts, a common cover, and a combination of the elements of chemical sources of electricity across a partition of the battery tank make it possible to lower the lead requirement by 12-15 percent.

The basic tendency of scientific and technical progress in the field of lead battery production is a reduction in the heavy metal requirement per unit of power. This is achieved primarily by means of a change in the construction of the apparatus. And batteries capable of operating reliably in a wide range of temperatures and of withstanding a large load when the motors are starting allow their service life to be extended.

In the course of many years, research connected with increasing the corrosion resistance of the current taps has been conducted in our country and abroad. As operational tests and worldwide experience show, the addition of cobalt salts lengthens the service life of the batteries.

Another resource for increasing the service life of batteries is raising the quality of the separators. The ones in use at the present time have two-three times more electrical resistance than the world's best models.

The increased resistance of the separators leads to a decrease in the initial voltage of the battery, which negatively affects the economy of chemical sources of current. The absence of highly porous low-ohm separating materials is a serious obstacle, preventing the achievement of rational consumption of lead and the development of a highly effective electrotechnical product. It cannot be said that these difficulties are insurmountable. High-quality polyvinylchloride resins are necessary, which make it possible substantially to improve the characteristics of the separator materials. Unfortunately, the Minkhimprom [Ministry of Chemical Industries] for a long time did not pay the proper attention to the development of these resins. The bureaucratic approach and the absence of incentive in the solution of this important problem in the national economy had an effect.

Also far from exhausted are the possibilities for perfecting the lead-acidic system in storage batteries. A significant savings in lead is promised by the introduction of new storage batteries with tapered terminals for KamAZ [Kama motor vehicle plant] vehicles. This allows an annual savings of 300 tons of lead, and the production of several thousand additional batteries. However, in spite of the repeated requests and appeals from the Minelektrotekhprom [Ministry of Electrotechnical Industries] and USSR Gossnab, the Ministry of Automobile Production is not hurrying to change over to assembly of KamAZ vehicles with the batteries with tapered terminals.

Existing battery designs and the production technology in use still do not allow the necessary efficiency in the use of lead. In many ways because of large losses. In the last two years at Minelektrotekhprom enterprises they have constituted more than six percent with the normative coefficient three times less. And at certain plants things are even worse. However, organizational and technical measures directed at decreasing losses are coming into being slowly. And it must be confessed that the actual waste levels of lead are much higher than the accounts show. A part of the materials is processed in the factories, but the bulk of the consumption of the ministry's waste is unplanned. If one adds to this the unprocessed material found in incomplete production, the real scale of losses will turn out to be still greater. The ministry long ago resigned itself to technological problems of a similar type, and does not take the necessary measures to establish order.

USSR Gosplan could have done much over a number of years, planning the volume of delivered scrap lead for Minelektrotekhprom with regard to above-the-norm technological losses in production. The absence of standards for the formation of waste, including the scrap from lead batteries, is the main reason for such poor planning. It does not allow an effective battle to be conducted for economy and thrift, and does not stimulate the enterprise toward the technical retooling of production.

In recent years more and more attention has been given to the utilization of batteries whose resources are exhausted, and to their processing, with the goal of recovering and using the lead for the production of new articles. This is a most important task for the national economy. After all, battery scrap is the cheapest source of raw lead.

What is the reason for the low use of secondary raw materials? An analysis, conducted by organs of USSR Gossnab in various branches of the national economy of certain regions, showed that a significant portion of scrap lead is wasted in the process of procurement and preparation for turning in batteries that have used up their resources. More than 90 percent of secondary materials arrive for processing in a broken down state. When this is the case, losses with the sludge comprise many thousands of tons, according to the specialists of USSR Mintsvetmet [Ministry of Non-ferrous Metallurgy] and Minelektrotekhprom.

A little more than a year ago, USSR Gosplan and USSR Gossnab approved a new order of collecting and turning in used batteries, as well as distribution of new and repaired lead batteries. And now good batteries are given out only in exchange for old ones. This allows a significantly greater quantity of secondary lead than in previous years to be drawn into the economic cycle.

The further improvement of its use would be favored by bringing active GOSTs [State All Union Standards] to scrap and waste, in accordance with modern technical requirements and the experience and analysis of economic practice. As tests have shown, the actual quantity of lead in used batteries exceeds the established norms by 10-15 percent. Such underestimated technical demands on the nationwide standard of course do not favor the rational use of a metal in short supply.

In work in the field of economy, the influence of technical progress not only on production factors, but on the formation of secondary resources should be taken into consideration. In accordance with the instructions of USSR Gosplan and USSR Gossnab, the USSR Mintsvetmet must organize at its enterprises and organizations receipt and processing of whole used lead batteries. As follow-up shows, unqualified disassembling of the batteries results in a 10 percent increase in losses of lead and other materials. So it is necessary to perfect the technology of utilizing the apparatus.

At USSR Mintsvetmet enterprises there is already something being done in this direction. They have begun to extract lead from battery scrap by the hydroseparation method. However, the available capabilities do not in full measure ensure the processing of whole lead batteries. Besides, relegating them, in accordance with the standard in force, to the group of low quality lead scrap and setting minimal procurement prices do not provide an incentive to turn in articles whole. With the introduction of new wholesale prices on industrial production, the correlation of procurement prices for scrap and wholesale prices for lead was reduced even more. And this was done absolutely without grounds.

In our opinion, in the government-wide standards and price lists for lead scrap, including that from batteries, it is necessary to define more precisely the classification, depending on the price of this type of resource. The implementation of such a suggestion would raise the incentive for deliverers in the final results of their work.

The basic scientific and technical trend in the economy of metal in battery production is connected with lowering the quota of consumption of lead-antimony alloys, without paying the proper attention to the methods of converting wastes into metal of pure grades.

At present, scientists are giving special attention to electrolytic refining, on a level with the perfection of thermal methods of processing lead. First of all this is necessitated by the complex utilization of whole batteries made in polypropylene and polyethylene cases. The recovered lead is sent for electrolytic refining, and the plastic case for secondary processing.

It should be noted, that with this method the lead turns out to be more pure, and the cost of refining goes down. Therefore it is only by underestimating such technology that one can explain the fact that the available technology for the electrolytic refining of lead is used for other purposes at the Konstantinovskiy plant, "Ukrtsink" imeni S. Ordzhonikidze.

New methods of processing waste are also being worked out weakly. In our opinion, the combined efforts of many ministries and departments are necessary for this, first of all that of USSR Mintsvetmet, Minelektrotekhprom, the USSR Academy of Sciences, and Gosstandart's Minkhimprom.

The time has evidently come to decide quickly the question of replacing lead with other metals where possible. The topic here is first of all cutting back consumption of this metal in the production of electrical cables. Here it could be replaced by aluminum and steel tape. However, such an exchange is held back by the shortage of sufficient quantity of turned aluminum ingots being manufactured at USSR Mintsvetmet enterprises, and by the low quality of the steel tape that is produced by the USSR Minchermet [Ministry of Ferrous Metallurgy]. Workers at these ministries must understand the urgency and acuteness of the task that is ahead of them, and renounce narrow departmental interests.

An important condition for further increasing the effectiveness of lead expenditure is the rational use of batteries and the provision for their preservation. It is possible to increase battery resources if centralized reconditioning is organized. The same measure will significantly reduce the consumption of pure refined lead and its alloys. The data attest to the importance of this work. At the present time just in the Minavtotrans [Ministry of Motor Vehicle Transport] system of the union republics there are more than 2,000 workshops, and in the State Commission for Agricultural Technology there are more than 100 enterprises that repair nearly a million batteries yearly. Besides this, enterprises of Minelektrotekhprom, Minavtoprom, and certain other ministries are involved in reconditioning.

Minelektrotekhprom's "Sevkavelektroremont" union, for example, by agreement with "Rostsel'mash," has been reconditioning an average of up to 5,000 batteries per year for several years. It is also involved in contract supervision of all stationary batteries in the rayons of the Northern Caucasus. The existence of a suitable shop, equipped with modern tools, provides the opportunity to achieve high technical and economic repair indicators.

The experience of these enterprises attests to the advisability of apportioning lead resources for battery repair. In this case the demand for new chemical sources of electrical current would be greatly reduced.

To achieve the most effective results in battery repair, it would be advisable to create support centers for battery reconditioning on the basis of Minelektrotekhprom's "Soyuzelektroremont" union. In our opinion, organization of such points should be conducted on the territorial principle, as has been done for example, in the zonal directorates of Soyuzvtortsvetmet for collection and processing of non-ferrous scrap metal. An enterprise of this type could, side by side with repairs, set in motion effective work in receipt and processing of quality scrap in complete agreement with technical requirements. Also necessary are zonal training schools in the rules of battery operation, diagnostics, and preventive care, so that only batteries that really have exhausted their resources will be sent in for scrap.

The problem of the economy and rational use of lead is complex. For its successful solution, it is necessary to have the efforts of many ministries and departments, and the permanent coordination of their activity. The organs of USSR Gosplan can and should organize such work on the basis of a long-term program. For this it is necessary to define the concrete problems of each department and organization, and to use the system of moral and material incentives.

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RAILWAYS MINISTRY PERFORMANCE IN 1ST QUARTER OF 1984

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[Article based on materials from Administration of Statistical Accounting and Reports, MPS [Ministry of Railroads: "Let's Reinforce What Has Been Achieved and Reach New Goals: Survey of the Work Performed by Railroad Transportation in the 1st Quarter of 1984"]

[Text] On the basis of the broadly extended socialist competition, the most effective use of technical means, the improvement of the technological aspects of the transportation process, the increase in production and labor discipline, and the introduction of the achievements of scientific-technical progress, the planned indicators in the first quarter for many of the volumetric and qualitative indicators were considerably overfulfilled. Especially large successes were achieved by the workers on the steel mainlines in March, when 9.9 million tons of national-economic output were hauled in excess of plan. And, with the exception of timber and mixed freight shipments, the plan was fulfilled for the entire specified list. For most of the indicators of the use of freight cars and locomotives, including for railroad car turnover, the established assignments were fulfilled for the first time in recent years.

In the first quarter the railroads hauled 962.8 million tons of freight. This is 10.8 million tons more than the plan and 26.6 million tons more than the level for the first quarter of 1983. The average daily rates of shipments during the quarter increased by 1.7 percent.

The plan for freight products list was fulfilled more steadily than during the previous years. Out of 42 freight types that had been stipulated by the plan, the shipment of 35 was provided. Moreover, for most of the freight a considerable increase in the volume of transportation was achieved. Out of the 17 most important freight types in the annual list, the plan was overfulfilled for 12. The shipment in excess of plan was 7.9 million tons for those freight types, including ores of all types, 1.9 million tons; stone coal, 1.5; ferrous metals, approximately 2; grain, 1.8; industrial raw materials and casting materials, 1.5 million tons; fluxes, 200,000 tons; cement, 122,000 tons; and petroleum and petroleum products, 529,000 tons.

The railroad workers are actively assisting the fulfillment of the Food Program. They have hauled in excess of plan 276,000 tons of sugar; 136,000 tons of meat and animal fats; 174,000 tons of potatoes, vegetables, and fruits; 108,000

tons of fish; more than 25,000 railroad cars of other food products, 15,000 railroad cars of manufactured consumer goods, and 47,100 railroad cars of output in containers.

The amounts of transportation of granulated slags as compared with the first quarter of 1983 increased by 133,000 tons; chemical and mineral fertilizers, by 1.1 million tons; and timber, by 2.7 million tons. However, the plan for shipment of these and other freight types was underfulfilled.

Twenty-nine railroads coped with the overall loading plan. The October Railroad undershipped 185,000 tons; the Central Asian, 175,000 tons; and the Kemerovo, 602,000 tons. These amounts are below the extent of the average daily loading of each of the enumerated railroads.

Sufficient steps were not taken everywhere to implement the shipment plan for the entire list of freight types. For example, the Kemerovo Railroad undershipped 1.3 million tons of stone coal; the Tselin, 152,000 tons; the Krasnoyarsk, 127,000; and the Northern, 86,000 tons. The undershipment of petroleum and petroleum products on the Kuybyshev Railroad came to 363,000 tons; on the West Siberian, 295,000; the Far Eastern, 149,000; the South Urals, 143,000; and the East Siberian, 134,000 tons.

The Northern Railroad failed to ship against the plan 1.2 million tons of timber; the October, 470,000 tons; the Gorkiy, 349,000; the East Siberian, 230,000; and the Sverdlovsk, 227,000 tons.

The undershipment of chemical and mineral fertilizers on the Sverdlovsk Railroad came to 172,000 tons; the Alma-Ata, 125,000; and the Lvov, October, and Gorkiy Railroads, within the limits of 80,000 tons each.

The use of the hauling capacity of the railroad cars continued to improve.

The static load exceeeded that specified by the plan by 280 kilograms and the level of the first quarter of last year by 300 kilograms on the average per railroad car, that is, the goal that was set for 1984 was achieved. This permitted the shipment of 5.4 million tons without the use of any additional rolling stock. All the railroads coped with the assignment for static load with the exception of the East Siberian, Tselin, and Far Eastern Railroads. The static load increased when many of the bulk-freight types were being delivered.

The plan for unloading for the network as a whole was somewha underfulfilled (by 0.1 percent), primarily as a result of a lag that had been allowed to occur in February, although as compared with the level of the first quarter of 1983 the unloading increased by 1.3 percent. Fifteen railroads coped with the assignment, including the Kemerovo, Gorkiy, Donetsk, and East Siberian Railroads.

At the same time, on a number of railroads that failed to fulfill the unloading plan there was a noticeable surplus of local freight. On the Central Asian Railroad that surplus exceeded the norm by 31.5 percent; the Alma-Ata, by 30.7; the October, by 28.8; the Moldavian, by 15.4; the Azerbaijan, by 19.7; and the Far Eastern, by 20.6 percent.

The freight turnover during the first quarter was fulfilled in the volume of 910 billion rated ton-kilometers. That is 15 billion (1.7 percent) more than the plan and 25.9 billion more than last year's level. The plan, according to the data for the first two months, was fulfilled by 21 railroads. The total increase in freight turnover was assured by increasing the volume of shipments, since the average distance of transportation dropped by only one kilometer. For individual freight types it dropped considerably: for example, for stone coal, by 9 kilometers; petroleum and petroleum products, by 37; nonferrous ore and sulfur raw materials, 21; timber, 38; refractory materials, 20; and cement, 17 kilometers. At the same time it increased for shipments of coke, metal structurals, grain freight types, ferrous metals, mineral fertilizers, and building materials.

A special place in the work of railroad transportation is occupied by passenger shipments. In the Ministry of Railroads and on the railroads a considerable amount of work is being done to improve the efficiency of the service provided to the passengers and to reinforce the material-technical base of the passenger management. The schedule for departure of passenger trains was improved by 0.7 percent; for proceeding along the route, by 2.3 percent; and for arrival, by 3.3 percent. However, on a number of railroads the schedule is being fulfilled at a low level. For example, for proceeding along the route on the Azerbaijan Railroad, it came to 75 percent, and on the Central Asian, 79 percent.

Passenger turnover constituted 72.5 billion passenger-kilometers, or 1.5 billion passenger-kilometers below the plan. As compared with the first quarter of last year, passenger turnover dropped by 0.7 billion passenger-kilometers.

In the first quarter there was an improvement in the forward movement of the railroad-car flows. The overall transfer of railroad cars increased on all railroads with the exception of the North Caucasus, Azerbaijan, Trans-Caucasus, Tselin, and East Siberian, and increased for the network as a whole by 6,400 railroad cars on the average per 24-hour period.

The South Eastern, Volga, and Baykal-Amur Railroads fulfilled the norm for transfer of railroad cars. An especially high level was achieved in March, when the increase over March 1983 came to 13,000 railroad cars, and on individual days in that month it was equal to 389,000-396,000 railroad cars.

On a number of railroads, and primarily on the West Kazakhstan, October, Alma-Ata, South Western, Northern, Volga, North Caucasus, Kuybyshev, South Eastern, and Gorkiy, with large surpluses of through-shipment freight (from 116 to 145 percent as compared with the norm), the assignment for the transfer of loaded railroad cars was not fulfilled.

The basic qualitative indicators for the use of railroad cars and locomotives on most of the railroads and for the network as a whole improved as compared with the plan and with the first quarter of last year. The railroad-car turnover was accelerated by 7 hours, and its average daily productivity increased by 354 ton-kilometers net; and the average daily run increased by 4.2 percent.

The railroad-car turnover was accelerated by 23 railroads and its productivity was increased by 24 railroads, with 16 railroads fulfilling the plan for those indicators. However, the October, Baltic, South Western, Lvov, East

Siberian, and certain other railroads not only failed to fulfill the plan, but also worsened the use of the freight cars as compared with the similar period last year.

The broad use of the experience of the Moscow Railroad in driving heavy-load trains made it possible to increase the average train weight by 55 tons, as against the plan, and by 75 tons as compared with the level of January-March 1983. It must also be emphasized that all the railroads except the Azerbaijan Railroad fulfilled the plan, and nine of them exceeded a 100-ton increase. They are the South-Western, Moldavian, Dnepr, West Kazakhstan, Tselin, Alma-Ata, West Siberian, South Urals, and Baykal-Amur Railroads.

The plan for locomotive productivity was fulfilled by 17 railroads and exceeded by 22. However, the drop in that indicator that had been allowed to occur by the other railroads made it impossible to fulfill the plan for that indicator for the network as a whole, basically as a result of the reduction of the average-daily locomotive run. The underfulfillment came to 0.8 percent.

The sector speed of traffic for freight trains came to 32.4 kilometers an hour, which is 0.1 kilometers more than the plan and 1.2 kilometers higher than last year's level. It increased on 23 railroads. In March the sector speed surpassed the planned assignment by one kilometer an hour and the March 1983 level by 1.8 kilometers.

There was also an improvement in the rate of movement of freight trains along the route for the network as a whole by 4.8 percent, and in March by 6.8 percent, coming to 74.6 percent. At the same time, 11 railroads had a reduction in that indicator, and on a number of railroads it is being fulfilled in general at a very low level, especially on the Volga, Gorkiy, and Kuybyshev Railroads.

The plan for repair of freight cars at railcar repair yards and plants of TsTVR [Main Administration for the Repair of Rolling Stock] was overfulfilled, and an increase over last year's level was achieved. On the initiative of the enterprises in Moscow, the industrial enterprises of other ministries and departments in the first quarter renovated, by means of current repair, 215,000 freight cars and 60,200 containers. At the same time, the pool contains a large number of defective railroad cars, the number of which has increased as compared with last year. On 19 railroads the number of defective boxcars has been kept above the norm, with the largest number of them having accumulated on the Southern, Northern, South-Eastern, and Kuybyshev Railroads. There was a 14.6 percent reduction in the number of uncouplings of freight cars for reasons of technical defects. There was a 19.6 percent reduction in the number of train stops at intermediate stations by PONAB [expansion unknown] devices.

During the first two months of the current year, the norms for the specific expenditure of electrical energy and diesel fuel for train traction on the network as a whole were fulfilled. There was an economizing of more than 220 million kilowatt-hours of electrical energy and approximately 20,000 tons of diesel fuel. An overexpenditure of electrical energy was allowed to occur on the Azerbaijan, October, West Siberian, Krasnoyarsk, and Trans-Baykal Railroads, and of diesel fuel, on the West Kazakhstan, October, Belorussian, Central Asian, Sverdlovsk, and Trans-Baykal Railroads.

The plan for the associations of Glavpromzheldortrans [Main Administration of the Railroad Transportation Industry] for volume of shipments was fulfilled by 101.5 percent and for loading-and-unloading operations, by 100 percent. The total amount of loadings was reduced by enterprises of the Moscow City Association; and unloadings, the Sverdlovsk and Vladimir Associations. The idle-time norm proved to be increased as a whole by 0.8 hours, and in the Leningrad Association, 3.3; Moscow, 2.5; Sverdlovsk and Volgograd, 2.2 hours each.

The plan for shipments of passengers on subways was fulfilled by 99.4 percent. However, as a result of the steps that were taken to reduce the labor, material, and fuel-and-energy resources, the assignment for labor productivity was exceeded by 1.1 percent, and the production costs dropped by 0.6 percent as compared with the plan. The capital-investments limit for the main administration was used by 110.1 percent, including 109.2 percent for construction-and-installation operations.

The industrial enterprises in railroad transportation fulfilled the assignments for sale and for normative net output, for shipments according to contracts, and for the production of output in the basis products lists in the national-economic plan.

The sales plan for the network as a whole was fulfilled by 101.4 percent, with the TsTBR plants selling in excess of plan a total of 4.4 million rubles of output, and the railroads, 2.7 million rubles.

A lag in plan fulfillment was allowed to occur by the Michurinsk, Ordzhonikidze, Dnepropetrovsk Voronezh, and Yaroslavl Railroad-Car Repair Plants, Transsvyaz' in Kharkov, and the October, Alma-Ata, Sverdlovsk, and certain other railroads.

The planned assignments for repair of the rolling stock and most of the items on the basic products list, including the production of spare parts, were overfulfilled. At the same time there was a lag in the fulfillment of the programs for the repair of subway cars and passenger railroad cars by the TsTVR plants, and also for the production of individual types of spare parts.

The labor productivity of the workers employed in shipments increased, as compared with the first quarter of 1983, by 2.8 percent, with an assignment of 1.6. The assignment for increase in labor productivity, according to the data for January-February, was fulfilled by 20 railroads.

For the network as a whole and on 15 railroads, the increase in labor productivity provided for the entire increase in hauling work. At the same time, on the Azerbaijan, Moldavian, Lvov, Krasnoyarsk, Odessa, and a number of other railroads that condition is not being fulfilled.

The rise in the level of operational work could not fail to have an effect upon the results of the use of work time. Overtime operations, according to the data for January-February, dropped by 10.2 percent as compared with the same period last year, and idle-time periods, by 6.1 percent. However, on nine railroads the situation with regard to the organization of labor has worsened. For example, the overtime hours on the October Railroad increased by 14.3 percent, the Baltic, 14.2; East Siberian, 8.2; and Trans-Caucasus, by 6 percent.

Trips with violations or prolongations of the operating conditions for locomotive crews were reduced by almost 40 percent.

The profit in excess of plan exceeded 24 million rubles, and production costs dropped by 0.5 percent.

The successful fulfillment of the assignments for April, the second quarter, and the first half of the year requires a careful analysis of the results of the work performed during the previous quarter, the revelation and most critical examination of the shortcomings that occurred in the organization of the shipments and the use of the technical means and material and labor resources, and the taking of effective steps to eliminate them.

At the beginning of the second quarter, the springtime field operations will be actively extended in all the oblasts and republics of our country. A very important task of railroad workers is the guaranteeing of freight shipments for agriculture, the shipments of planting materials, chemical and mineral fertilizers, farm machinery, and fuel for the motor-tractor equipment.

In the second quarter, another task of primary importance is the guaranteeing of the plan for shipments of stone coal, petroleum and petroleum products, metallurgical-ore raw materials, timber, foodstuffs, and other important national-economic freight types.

The resolution of these tasks will require the carrying out of energetic technical-organizational measures that are aimed at increasing the extent of transfer of loaded and empty railroad cars, the hauling of local freight, the acceleration of the delivery of railroad cars to the unloading fronts, the acceleration of the unloading of railroad cars, and the reduction of the amount of railroad-car turnover time.

Special attention in the second quarter must be devoted to supporting the mass shipments of passengers which are beginning.

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NEW NUMERICAL CODING SYSTEM FOR FREIGHT CARS

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[Article by Doctor of Technical Sciences L. P. Tulupov and Engineer I. A. Ivanov-Tolmachev: "New Numbering System for Freight Cars"]

[Text] The existing seven-digit numbering system for freight cars was introduced in 1963. As is known, according to the first digit of the number, cars are distinguished as: box cars, flat cars, open cars, tank cars, refrigerator cars, and other cars. The second digit is a code for the number of axles and the fundamental technical characteristics of the rolling stock. The third digit of a number contains information about additional characteristics and the designation of cars for hauling specific kinds of freight. The remaining digits (from the fourth to the seventh) do not contain information about cars except for transporters. In all, among the six kinds of cars, 51 types are distinguished.

From the moment of the introduction of this numbering system for rolling stock, the stock of freight cars changed substantially both quantitatively and qualitatively. Practically none of the two-axle cars remain and the number of six-axle cars has been reduced. At the same time, new types of cars have appeared; namely, two-tiered flat cars, wholly metallic cars for hauling automobiles, special tank cars for chemicals, closed hopper cars for grain, and other types. Every year the proportion of special rolling stock grows.

For these reasons the "capacity" of the numbers, drained by all the different types of cars, was found to be exhausted. In the operative numbering system, the distinguishing of cars with treadplate platforms and hand brakes and the coding of open cars with drop-bottoms had to be relinquished.

The consolidation of several models of cars into one group or type was a forced measure because the existing numbering system had been built based on requirements for manual processing. At the same time, the proportion of primary documents processed by computer is growing annually. It is enough to say that right now, about 20 percent of the type lists for trains are made up by computer. In the next few years the ASU [Automatic Control System] will be developed at all large marshalling yards. A decision was adopted about widespread dissemination of the experience of the Belorussian railroad.

As is known, on that railroad all the type lists for the trains are found in the data bank of the computer center. Consequently, the new numerical coding system must provide for the maximum utilization of the advantages of computer processing.

The number must characterize all the technical and commercial features of a freight car which are important for operations. Under conditions of a high level of utilization of the traffic or carrying capacities of a line, one of the most important features is car length. Analysis showed that the consolidated tables according to which a train's length is calculated in standard car-length units (of 8 meters), actually "specify" an under-usage of the useful length of station ways by up to 30 meters or more. As a rule, the excesses amount to from 10 to 20 meters. Practically, this means that for approximately every other train made up for the length of way, one additional car could be included with more accurate train-length calculation. This will provide for an increase in the length and weight of the train and, correspondingly, a 0.2 to 0.4 percent increase in the real carrying capacity. Experience shows that this increase is equivalent to a capital investment of 100 to 200 million rubles. At the same time, those line operational expenses that do not depend on the dimensions of a movement, can be reduced by 2 to 4 million rubles. More detailed calculation of the empty weight of cars will increase the accuracy of calculations and of norm setting.

The technical characteristics of the types of cars are important for the optimum distribution of rolling stock for hauling various loads. For instance, on the Minsk division of the Belorussian railroad, instead of supplying box cars for loading without assortment as to type, they began to take it into account and to make up groups of box cars with a body volume of 120 m^3 for "light" loads and with a body volume of 106 m^3 for "heavy" loads. Static loading grew by o.3 to 0.6 tons per car.

The car number is an economic and versatile means for taking into account the special capabilities of cars for hauling one or another kind of cargo. This requirement should be realized in the new numbering system. The Belorussian railroad experience shows the advisability of introducing data about a haulage into the computer network during the initial and final operations - during loading and unloading. In the ASUZhT [Railroad Transport Automatic Control System] the remaining properties become attached expressly to the car or, more accurately,to its number.

During the loading and unloading of a freight car, the maximum possible trustworthiness should be provided for the information fed into the computer network. Then, along the way, the needed properties of a car and a load will, repeatedly, be gotten out of the computer. Once again this confirms the special importance of the car number as an identifier (a "key") for record keeping and for recovering necessary information at all stages of transportation. From this there follows a requirement for top-priority "protection" of a car number. During loading operations and along the way the computer will be able, in the majority of cases, to "prompt" and even to correct a number incorrectly recorded or transferred into the computer network. In the future, with the introduction of automatic systems for the reading of numbers, this problem will be solved for moving rolling stock.

Table 1

Type	Principal car characteristics	Design length mm	Design weight-t / Length in standard cars of 14m	First six digits of car number	7th digit code, or presence of treadplate platform
	2 - Four-axle box cars				
200	Body volume less than 120 m^3	14 730	22.7 / 1.05	200000-209999	0-8
201	Ditto, with treadplate platform	15 350	24.2 / 1.10	200000-209999	9
220	With body volume of 120 m^3 or more	14 730	23.0 / 1.05	220000-239999	0-8
221	Ditto, with treadplate platform	14 730	24.5 / 1.05	220000-239999	9
	4 - Four-axle flat cars				
400	Frame length up to 13.4 m	14 224	22.0 / 1.02	400000-409999	0-8
420	Frame length 13.4 m or more, overall dimensions I-T [expansion unknown]	14 620	22.0 / 1.05	420000-469999	0-8
	6 - Four-axle open freight cars				
600	With drop-bottom and end doors	13 920	22.5 / 1.00	600000-609999	0-8
601	Ditto, with treadplate platform	14 410	24.0 / 1.04	600000-609999	9
620	With drop-bottom without end doors	13 920	22.0 / 1.00	620000-659999	0-8
621	Ditto, with treadplate platform	14 410	22.6 / 1.04	620000-659999	9
670	With glukhoy [solid ?] body	13 920	21.1 / 1.00	670000-679999	0-8
671	Ditto, with treadplate platform	14 410	22.6 / 1.04	670000-679999	9
	6 - Eight-axle open freight cars				
690	With drop-bottom and end doors	20 240	46.0 / 1.45	690000-690999	0-8
691	Ditto, with treadplate platform	20 240	47.5 / 1.45	690000-690999	9

Table 1 (continued)

Type	Principal car characteristics	Design length mm	Design weight-t / Length in standard cars of 14 m	First six digits of car number	7th digit code, or presence of treadplate platform
	7 - Four-axle tank cars				
700	For bitumen, open hopper car	14 620	36.5 / 1.01	700000-7029999	0-8
772	For milk	12 020	23.3 / 0.86	771000-771999	0-8
773	Ditto, with treadplate platform	12 220	26.0 / 0.88	771000-771999	9
	7 - Eight-axle tank cars				
790	For petroleum and petroleum products with 159 m^3 tank volume	18 690	51.0 / 1.34	790000-791999	0-8
794	For light petroleum products with a 161.6 m^3 tank volume	21 250	51.0 / 1.52	797000-797999	0-8
	8 - Four-axle refrigerated cars				
800	Refrigerated car	14 730	26.0 / 1.05	800000-801999	0-8
878	5-section refrigerated car ZV-5 (GDR built)	22 080	42.0 / 1.58	977000-979999	0-8
	9 - Other four-axle cars				
900	For apatite concentrate, with elevating body	11 630	26.5 / 0.83	900000-909999	0-8
950	Hopper car for grain	14 720	22.0 / 1.05	950000-959999	0-8
970	Tank car for soda ash	15 720	31.3 / 1.13	970000-970999	0-8

(continued)

Table 1 (continued)

Type	Principal car characteristics	Design length mm	Design weight-t / Length in standard cars of 14 m	First six digits of car number	7th digit code, or presence of treadplate platform
	3 - Other four-axle cars				
300	Hopper-batcher TsNII-2	10 870	22.7 / 0.78	300000-304999	0-8
350	Dump car type 7V6-60	11 830	27.5 / 0.85	350000-359999	0-8
	3 - Other six-axle cars				
360	Flat car	25 220	40.0 / 1.80	364000-364999	0-8
362	Open car	16 400	31.0 / 1.18	366000-366999	0-8

Experience in the development and analysis of the existing numbering system for freight cars, and also research that has been done, has established that every type of car distinguished by the system must include within itself the features (even if only one of them) that distinguish it from cars of other types. Included in such basic features are: kind, number of axles, length between the axes of the automatic couplings, the presence of a treadplate platform, empty weight, body (or tank) volume, overall dimensions, and permanent accessories or special capabilities for hauling specific cargoes.

In the initial projects for the new freight car numbering system, for example, that developed by the Administration for Statistical Accounting and Reporting of the MPS [Ministry of Railways] all the considered requirements and features were not taken into account. The generalized new project for an eight-digit numbering system developed by the Moscow Institute of Railroad Transport Engineers according to an assignment of the Ministry, took these requirements and features into account more fully.

The basic principles for the structure of the new numbering system for 1520-mm gage freight cars are presented in table 1. Here for example, cars having two supplementary features - the presence of a treadplate platform and, as a rule, a longer length between the axes of the automatic couplings - are distinguished by a seven-digit number. For example, a four-axle box car with a body volume of 106 m^3 (type 200) has a length between coupling axes of 14,730 mm and a car with the same volume but with a treadplate platform has a length of 15,350 mm (type 201). In all, in the new numbering system 175 types of freight cars are distinguished including 66 types of transporters.

For every kind of rolling stock, the types of cars are grouped according to combinations of their features. As a rule, within the groups the cars are arranged according to length; that is, for car types having greater length, a larger number is specified. Within the groups and types a reserve capacity has been provided that can be used for future cars of similar type or for increased numbers of cars of the same type.

On the whole, the new numbering system has preserved the basic principles used in the previous system. Thus, encoded by the first digit are: 0 - passenger car, 1 - locomotive, track machine, crane or other track mechanism, 2 - box cars, 4 - flat cars, 5 - cars belonging to enterprises of other ministries, 6 - open cars, 7 - tank cars, 8 - refrigerator cars, 3 and 9 - other cars (special and others). Generally, for the numbers of all freight cars (except the numbers of cars beginning with the digit 3), the number of axles is encoded. The digits 0-8 (for the second digit of a car number) designate four-axle cars, and the digit 9, eight-axle cars. All six-axle cars and transporters belong among the other cars whose numbers begin with 3 (for six-axle cars the second digit of their number is 6 and for transporters, it is 9).

For all types of cars (except transporters) generally, the treadplate platform is encoded. A treadplate platform can only be on a car the seventh digit of whose number is 9.

The quantity of numbers allotted for each type of car is determined by their maximum presence in the stock at present and in the future. A reserve of numbers has been provided for future designs, for example, for eight-axle specialized cars.

In table 1 the numbers have been grouped in a definite order. For example, four-axle tank cars for transporting milk (without treadplate platforms) can have numbers (first digit 7) from a minimum of 7710000 to a maximum of 7719998. In that interval not all numbers can be used to designate tank cars without treadplate platforms because in each rank there is one number ending with the digit 9 which has been allotted for cars with a treadplate platform.

For example, a car having the number 2253449 is a four-axle box car with a 120 m^3 body volume with a treadplate platform, 6580022 is a four-axle open drop-bottom car without end doors or a treadplate platform, 7912038 is an eight-axle tank car with a tank volume of 159 m^3 for transporting petroleum without a treadplate platform, 3668322 is a six-axle open freight car without a treadplate platform, and 9537856 is a four-axle box car for grain without a treadplate platform. As seen from this example, the seven-digit number for a freight car contains the necessary and sufficient information for practical operations.

The eighth digit of a car number is a control. With it, the correctness of a number transmitted in documents will be verified. It is formulated in the following way. Every odd digit of the number of a car, beginning from the right side is multiplied by two and every even digit by 1. Then a digit-by-digit summing of the products is carried out, and the digit which increases the sum up to the next multiple of 10 is determined (modulo 10).

Example. The seven digit number of a car is 7435468. It is required to determine the control digit. For this let us carry out the following procedure:

car number - 7 4 3 5 4 6 8
multiplier - 2 1 2 1 2 1 2
products - 14 4 6 5 8 6 16
digit-by-digit sum - 1+4+4+6+5+8+6+1+6 = 41

Then the number which increases the sum up to 50, or the controlling eighth digit of the car number, will be 9 and the complete car number with the control digit will appear as: 7435468 -9

The eighth control digit permits detecting errors in the perception or transmission of a car number. For instance, during reading or transmitting the number, the third digit is deformed; that is, instead of 3, 8 is transmitted. In verifying the number by computer, or if necessary, by hand, the same calculation is carried out.

car number - 7 4 8 5 4 6 8
multiplier - 2 1 2 1 2 1 2
products -14 4 16 5 8 6 16
digit-by-digit sum - 1+4+4+1+6+5+8+6+1+6 = 42

The new digit-by-digit sum turns out to be 42 and the control digit increasing that sum to the next multiple of 10, accordingly, is 8. The calculated thus is not equal to the control digit 9 which was entered in the computer and the error will at once be detected. The computer, for instance, automatically will send a notification that the number transmitted is incorrect.

It is not difficult to show that in case of a distortion of the eighth control digit itself, the error also will be detected. The digit-by-digit sum will remain 41, but the control digit calculated by the computer upon receipt of the number will not correspond to the distorted control digit transmitted.

This method is used on the majority of railroads in the European countries. In addition, in designating cars in a number of European countries, besides the seven-digit number, two two-digit codes are included for the condition of exchange and for the country and the owners. The car designation includes eleven digits and the twelfth, the control, "defends" all eleven digits of the designator according to the above stated scheme. A very large majority of the freight cars of Soviet railroads (SZhD) are used only in internal communications; therefore the inscription on cars and the recording in all documents of an eleven-digit designation is clearly to no purpose. Usually, the codes for the Soviet railroads and the conditions of exchange are written down in the documents at border points. If they become permanent, then their digit-by-digit sum must be taken into account in calculating the control digit. It is advisable that the digit-by-digit sum of the codes for the conditions of exchange and the SZhD, obtained by the method described above, be a multiple of 10. In that case, the ASU of the other European railroads, when a Soviet car arrives, will use the standard method for control. In computer processing of internal documents and communications, where only the car number with its eighth control digit is used, verification will be accomplished in the following manner. The eighth control digit will be identical for verifying the seven-digit car number (in internal communications) and for its full, eleven-digit designation when going out onto the railroads of foreign countries.

The new numbering system for freight cars has been approved by the board of the Ministry of Railways and adopted for introduction into railroad transportation.

Let us consider another matter - the transition by stages into calculations using the new standard car-length of 14 meters. The most numerous rolling stock, the four-axle open car, conforms to this length. Their length, (13,920 mm) taking into account the allowable extensions of the coupling devices, will be equal to 14 m. This will facilitate operation and technical control during the transition period. In addition, almost complete correspondence will be achieved between the actual number of cars and the number of standard cars in a train.

Calculating the length of a train will, as a rule, be done in the metric system; that is, taking into account the actual length of the cars of each type. The sum of the lengths will be divided by 14. For manually deter-

mining the length of a train during the transition period, a consolidated calculating table (table 2) has been approved in which, with some rounding off, calculating groups are assembled of cars of one or several types having nearly equal values of length and empty weight. For purposes of assuring safety, the calculating length was taken as the maximum length of a car model entering to a given type group. The calculating empty weight was taken as the weighted mean of the empty weights of all the types of cars in a given group.

Table 2

1st digit of number, kind of car	2nd digit of number, number of axles and main features of car group	Calculating car length in standard four-axle cars (14 m)	Calculating empty weight of car, t
2-box car	0-7, four-axle	1.05	23
4-flat car	0-6, four-axle	1.05	22
6-open car	0-7, four-axle	1.0	22
Ditto	9, eight-axle	1.45	46

In the transition period, the four-axle open freight car without a through treadplate platform is taken as the standard car (in table 2 the length and empty weight of cars without treadplate platforms are indicated). If one or several cars with treadplate platforms appear in a train (the quantity of them can easily be established by the appearance of 9 as the seventh digit in their numbers) then the additional length and empty weight is taken into account in the following way. From table 1 it is seen that the maximum increase in the length of a car with a treadplate platform is 620 mm, or 0.05 standard four-axle cars (type 201). Consequently, safety of movement will be assured if the train is lengthened by an amount equal to the product of that value by the number of cars with through treadplate platforms. The calculating empty weight for such cars is obtained by the addition to the quantity taken from table 2 of the additional weight caused by the treadplate platform of 1.5 tons.

Example. A train has been formed of 50 empty open freight cars. According to table 2 its length is not less than 50 X 1 = 50 standard cars (14 X 50 = 700 meters). In the train there are four open cars with through treadplate platforms. The additional length of these cars is 4 X 0.05 = 0.2 standard four-axle cars. Then the calculated length of the train will be 50.2 standard cars; that is, 50.2 X 14 = about 703 meters.

Let us show by this example the effectiveness of the proposed method for determining train length. At present it is calculated according to a standard car length of 8 meters. According to the existing method the train length will be 50 X 1.8 = 90 standard cars, or 90 X 8 = 720 m. Because of introducing the new system of numbering and refining the calculation of train length, the length can be increased by 720 - 703 = 17 m; that is, one additional car can be added to the make-up of the train.

To facilitate the manual calculation of train length and weight on the basis of table 2, it is advisable to use auxiliary tables in which the total lengths and weights are determined for any number of cars of a given group.

It has been decided to inscribe the 250 mm-high numbers on both sides of the body (on its left half and in the middle of the height) with a template and white oil paint. The eighth, the control, digit is put down after a dash. On cars painted in light colors the number will be inscribed in black. On tank cars and hopper cars for hauling bitumen, metal numbers will be welded on. The methods and principles of numbering which have been considered are also applicable to passenger cars and heavy or special rolling stock.

The introduction of the new system of designating cars is an economically effective organizational and technical measure. Thanks to the well-defined division of cars according to type and design characteristics, the standardized length, weight, and static loading of trains being made up is increased, and a stock of cars is freed for supplementary hauling of national economic cargoes. The introduction of the control digit increases the trustworthiness of information about a car and this improves conditions for the introduction of the second stage of the ASUZhT.

9136
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PORTS AND TRANSSHIPMENT CENTERS

CONFERENCE RECOMMENDS PORT MANAGEMENT, OPERATIONS IMPROVEMENTS

Moscow VODNYY TRANSPORT in Russian 15 Mar 84 pp 1-2

[Report on interview with I. B. Orlov, deputy chief of the Transportation and Operation of the Fleet and Ports Main Administration of the Ministry of the Maritime Fleet (Glavflot MMF), by V. Orlov in the column "Seaport: Problems of Management"; "Improve the Structure"; date and place not specified]

[Text] As one can see from the editorial mail, the problems of managing seaports are on the agenda in practically all basins of the country today. Following the publication in the newspaper of the article "Both Form and Content," which described how the Nikolayev commercial seaport has as an experiment changed to a principally new structure of managing production by eliminating cargo regions, the editorial office has received a large flood of letters. Many of them were published. In these materials the readers argued with their Nikolayev colleagues over whether it is legitimate to eliminate a link such as the cargo region from the management system and to lock production transshipment complexes directly to the port's management departments. Many offered their own ways for solving this problem, they agreed with some things and disagreed with others.

Recently, a sectorial conference was held in Leningrad on improving the ports management structure and organization of their activity. Participating in it were B. P. Trunov, deputy minister of the maritime fleet; responsible workers of the Ministry of the Maritime Fleet; Ye. P. Korsakov, chief specialist for the maritime and river fleet of the USSR State Committee for Labor and Social Problems; supervisors of shipping companies and ports; and specialists of planning and scientific institutes of the sector.

After hearing and discussing reports and speeches and being guided by the resolution of the CPSU Central Committee and the USSR Council of Ministers "On Improving Planning in Organization of Transportation of National Economic Cargo and Passengers and Intensifying Influence of the Economic Mechanism

on Raising Work Efficiency of Transportation Enterprises and Organizations" and the resolution of the CPSU Central Committee "On Further Developing and Raising Effectiveness of the Brigade Form of Labor Organization and Stimulation in Industry" participants in the conference adopted recommendations. We have asked Igor' Borisovich Orlov, deputy chief of the Transportation and Operation of the Fleet and Ports Main Administration of the Ministry of the Maritime Fleet, to comment on them.

[Answer] It is, probably, necessary to begin with the fact that fundamental reorganization in the organization of loading and unloading work in ports occurred 25 years ago. It was decided at that time to organize in the production process on the berths a primary link of the labor collective--complex brigades of dockers-machine operators. Later on the leading place was assumed by consolidated complex brigades, in which more than 83 percent of dockers-machine operators are concentated today. Some of them already have 200 and more people. Berths, warehouses and transshipping equipment are assigned to such collectives. Nearly 40 percent of dockers-machine operators are at present in financially self-supporting complex brigades.

Owing to today's requirements and tasks, the forms of organization of the transshipment process in ports are being constantly improved. Production transshipment complexes, which specialize according to the type of cargo or the character of the maritime routes being served, already operate in many of them. They make it possible to raise labor productivity on berths, to conduct processing of vessels and railcars more intensively and to independently solve many production questions.

Therefore, participants in the Leningrad conference have unanimously decided that the production transshipment complex should be regarded today as a primary structural subdivision of a seaport. Included in its composition are consolidated complex brigades, including financially self-supporting ones, operations-management and warehouse personnel, berths, warehouses, access routes and transshiping equipment.

[Question] Igor' Borisovich, how does the production transshipment complex differ from a cargo region of a port, does it not duplicate its functions?

[Answer] Before responding to this question, it is probably necessary to refer to theory at first. The existing generally accepted system of sea ports management consists of three links. The first are a port's management departments, then cargo regions according to jurisdiction and closing this chain are production sectors and brigades of dockers-machine operators.

Port operations can also be organized according to a two-link system, under which direct participants in the transshipment process lock on directly on a port's management departments. The intermediate link--the cargo region--is eliminated in such a maximally simplified scheme.

Let us now look at what a production complex is. To state it simply and briefly, it can be defined as a financially self-supporting subdivision whose tasks include rapid and qualitative transshipment of cargo arriving in a port and expeditious processing of transportation means.

The basic activity of a region, of course, also includes fulfillment of these functions. But many other responsibilities are assigned to a region. They include questions of labor and wages, commercial work, economic security and replacement of fixed capital.

A production complex is completely free of all concerns that are not directly connected with fleet and railcar processing. In other words, this subdivision is called upon to engage in loading and unloading, if one may express himself this way, in a clear form. At the same time, a complex possesses more production possibilities than a brigade, and this means greater independence.

Now it is possible to respond to the second part of the question. The new management structure, which was discussed at the conference, provides, first of all, for centralization of all auxiliary services. In other words, regardless of according to which scheme--three or two link, with or without regions--the work is organized in a port, all problems that are not connected directly with cargo transshipment are undertaken by the management of a port.

When work is organized in this manner, a production complex can under certain conditions fully lock on directly on a port's management departments and bypass the intermediary link, such as the region.

[Question] But then it turns out that the seaports, which have production transshipment complexes, must change to a structure of management without regions.

[Answer] It is not entirely like that. The matter is that in large ports, where there are many production transshipment complexes and regions are located territorially far from each other, a two-link system can turn out to be unacceptable. A series of problems arise here connected with efficiency in managin production processes.

Therefore, recommendations of the conference provide for changing to the management structure without regions only in ports of the second and third groups, and in noncategory ports and ports of the first group either to two or three link structure of management with consideration of the territorial location of regions and other features of economic activity. However, regardless of category the recommendations provide that the majority of auxiliary functions as well as those uncharateristic of basic operational activity which are being fulfilled by cargo regions are to be concentrated in the newly organized functional structural subdivisions of a port with a centralized management system.

Of course, if one is to speak of long-term, then further improvement of the ports management structure will develop in the direction of a structure

without regions. Therefore, the conference recommended to the Transportation and Operation of the Fleet and Ports Main Administration, the UOTiZ [Labor Organization and Wages Administration], the State Planning, Design and Scientific Research Institute of Maritime Transportation of the USSR Ministry of the Maritime Fleet [Soyuzmorniiproyekt] and the Baltic, Black Sea and Far Eastern shipping companies to conduct within periods set by the ministry an experiment on introducing the new structure in the ports of Leningrad, Kaliningrad, Vyborg, Nikolayev and Vladivostok.

Further development of the automated control system [ASU] must become a prime task during conversion to a management structure without regions. The matter is that production transshipment complexes are much smaller structural subdivisions than cargo regions. Naturally, there will be a greater number of them, which means that port management departments will have to cope with a greater volume of information. This cannot be done without electronic computers [EVM]. This is why it is necessary to most rapidly equip production transshipment complexes and other functional-production subdivisions of a port with means of computing technology, collection, preparation, processing and transmission of information and to develop channels of communication.

[Question] Naturally, the new system simplifies the management structure, makes it more efficient, transforms the departments of a port from control organs into executive ones and makes it possible for production sectors to concentrate their attention on fulfilling the basic task--cargo processing. But how will the conversion to the new management system affect the activity of brigades of dockers-machine operators, what advantages are in the production transshipment complexes for them?

[Answer] First of all, the quantity of indicators which reflect their production activity will be reduced. Today, one hears complaints practically from every brigade leader, especially from a leader of a financially self-supporting consolidated complex collective of dockers, about the large number of indicators, which are sometimes even difficult to be competently considered. For example, it is difficult to calculate in a brigade the expenditure of electric energy by a crane or low-powered equipment. A financially self-supporting collective has to take into account more than 10 similar indicators.

The new structure provides for a minimum number of indicators for a brigade. Only three or four of them will remain, or those which will reflect the functional character of activity of a given subdivision alone and a generalized indicator for the port as a whole, which is connected with processing results of vessels and other means of transportation.

The new structure also stipulates the dependence of wages and payment of economic incentives to operations and management, warehouse and auxiliary personnel of a production transshipment complex on the final work results of the brigades assigned to them. For example, appraisal of stevedores' work acquires a specific character, and their personal responsibility for the work being performed will be raised.

Thus, the pluses, as the saying goes, will be gained by practically all production subdivisions of a port, but most importantly is that the new structure will make it possible to increase labor productivity on the berths and to devote more attention to the quality of cargo processing. The December (1983) plenum of the CPSU Central Committee has set the task of beginning the 12th Five-Year Plan with a well-adjusted economic mechanism, which would make it possible to use more fully the possibilities of our economy. Introduction of the new management structure at seaports will be one more step toward achieving this goal.

9817
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IMPORTANCE OF NEW PORT OPERATIONS STATUTE STRESSED

Moscow MORSKOY FLOT in Russian No 2, Feb 84 pp 12-14

[Article by I. Orlov, V. Bel'kovets, Glavflot [Transportation and Operation of the Fleet and Ports Main Administration, Ministry of the Maritime Fleet]; and I. Dmitriyev, Lenmorniiproyekt: "The Goal: To Improve Port Operations"]

[Text] The present system of transport management is based on the latest scientific and technical achievements in the areas of the material-technical base and of transportation management and organization.

The most important feature of recent years is the broad implementation of a complex system of continuous planning by the operations management of the sector's enterprises. The system is based on coordinated continuous schedules and plan/schedules for port and fleet operations. The sector implemented this system during the 1[illegible]h Five-Year Plan.

However, as time passes, greater demands are being made on fleet operations, on executive discipline at all management levels and on meeting continuous schedules for fleet operations. There is much hidden reserve capacity here; utilizing it is one of the main sources of shipping growth.

But the operation of the fleet depends to a large extent on how efficiently it is handled in port, where an important part of the shipping process takes place: the transference of freight from one mode of transport to another. The system of production and management organization in this link must take into consideration the particular aspects and changes occurring in the adjacent sections of the transport "conveyor."

The character of sector operations has now changed greatly, as has the sector's relationship with associated sectors. The integration of various modes of transport is occurring, in which receiving, shipping and fundholding organizations, as well as their transport-expeditor services, are more actively participating. The experience, approved by the CPSU Central Committee, of the Leningrad transport industry has expanded the framework of coordinating the transport collectives' efforts. It has achieved a level of interrelationships through direct and group organizational links. The enterprises and organizations of transport terminals and transport-economic regions are united by information links, similarity of production plans, unity of problems and tasks, direct technology and even joint economic and social development plans.

In recent years, an increase has been noted in the qualifications levels of port workers, engineering and technical personnel and production organizers and managers. The methods and forms of labor and production organization in ports has been further developed. The organizational structure of the sector has improved. All of this has broadened the management possibilities. The enhanced independence of operations management has become a reality, in accordance with the requirements of the November 1982 CPSU Central Committee Plenum. The Plenum emphasized the role and responsibility of production managers and organizers, and the necessity of making increased demands on end results while removing trivial everyday regulations.

These requirements take into consideration the new Statute on Organizing the Handling and Servicing of the Dry-Cargo Fleet in Sea Ports, which went into effect on 1 January 1984.

The new Statute was developed in stages according to a plan approved by the ministry. The plan provided measures for the collective discussion of the main methodological directives.

Because of the need for operations management to actively implement the elements of the Statute, much attention was given to developing a normative base for carrying out the continuous plan/schedule of port operations (NPGRP). The assumptions on which the norms are based were developed by the ports and affirmed by the shipping companies. Then they were carefully discussed with port and shipping company representatives and agreed upon by Lenmorniiproyekt. This was truly a collective effort: practically the entire operations staff of the ports, shipping companies and central apparatus took part in developing these documents.

The Statute provides for several procedural changes in the NPGRP, the normative base and the settlement system for ship dock time. The need to make changes in organizing ship handling was proved by many years experience in port operations. It takes into account the present state and future growth prospects for the material and technical base of the fleet and ports, the management level of port administration and the growth in inter-sector transport coordination. It also considers the growing professional expertise of workers, the qualifications and experience of engineering and technical personnel and of shipping company and port management.

The main aim of the new statute is to redu e fleet dock time in port and to ensure the fulfillment of the planned freight transshipment volume.

The basic path toward achieving this goal is to more fully utilize the productive capacity of the port. To do this, the Statute coordinates the normative base for NPGRP implementation with: 1) the freight-handling plans established by the ports, 2) the tasks for shipping the most important national-economic freights and 3) the plans for rail car handling. The Statute also provides for the development of a normative base for implementing the NPGRP that will ensure the maximum use of port capacity and freight-handling complexes. Another provision

is for intensifying the handling of each vessel with optimum mechanization at maximum productivity. The Statute also provides for increased stability of schedules, vessel handling time and an improved system of accounts, accountability and settlements for vessel dock time. Such a system would ensure the simplicity, uniformity and controlability of calculations.

The freight-handling complex is considered the elemental capacity unit of the port. It includes all the elements used for freight transference: berths, storage, mechanization equipment, railroad spur tracks and loading areas. Brigades of longshoremen and the warehouse and technical operations personnel operate the complex.

The normative base for NPGRP management determines the port's productive capacity and is based on the capacity of the freight-handling complexes, which are the main link in the organization of labor, production and management in the port. The normative base includes the NPK [norm for the number of simultaneously operating freight-handling complexes in the port], the consolidated norms for ship handling and the norms for auxiliary operations.

The NPK's determine, per quarter of the plan year, the number of ships that can be handled simultaneously in port, taking into account the maximum interchangeability of the freight-handling complexes. This will ensure the fulfillment of the port's freight-handling plan and the consolidated norms for ship handling. The norm, agreed upon with the ship line, is confirmed to the port by the Ministry of the Maritime Fleet. Implementation of the NPK is easily monitored.

The Statute provides for the application of consolidated norms based on the actual capacity of the port's freight-handling complexes. In essence, it is the gross ship-handling norm per berth.

The use of consolidated norms makes it possible for the port itself to regulate, in a certain time interval, the rate of handling one or another ship. In other words, it allows the port to creatively organize the operations in the transport terminal.

In this regard, the Statute contains provisions for evaluating the organization of fleet handling in port operations on the basis of total monthly ship-handling indices. This will stimulate ports toward improving their entire operations systems, rather than contingency "express" handling of separate vessels.

The consolidated norms ensure a higher ship-handling rate: about 8-10 percent higher overall than previously. This is achieved by the optimum concentration of mechanized lines on each vessel and their high productivity in the specific freight-handling complex.

The consolidated norms take into consideration possible weather-related interruptions in vessel loading and unloading. This makes it possible to determine the most probable ship-handling time and thereby increase the stability of the established ship-handling times. It also increases the stability of the NPGRP and the reliability of the continuous schedule of port operations.

The NPK and consolidated norms determine the port's productive capabilities. They are the main indices for determining responsibility for layover time between the port and the ship owners.

The normative forms and indices (the number of freight-handling complexes and their daily productivity for specific volumes of freight) in the Statute make it possible to increase the management efficiency of all the ports in the sector. The transshipment rate of specific nomenclatures of freight (not arbitrary groups of freight), when compared with the norms, makes it possible to more accurately determine the trend in improving and standardizing freight-handling technology.

In addition, the norms make it possible to more clearly determine the production capabilities of all the sector's ports. They make it possible to more correctly decide questions of port specialization and development. They also improve the quality of port operations management.

The Statute provides several changes in the settlement system for fleet layover time aimed at increasing the responsibility of shipping companies for handling all vessels in their ports.

Settlements for ship handling are made by the port with the ship owners for Soviet ships, while for foreign ships, they are made with the shipping company belonging to the port. For this, the lay days for all vessels are calculated on the basis of the port's established consolidated norms and the norms for fulfilling auxiliary operations. The timesheet and vessel handling and service report serve as a basis for settlements.

In settlements between the port and the shipping company involving Soviet vessels, the demurrage (dispatch) rate is 100% (50%) of the cost of the vessel's dockside operational maintenance for each hour over (under) the stipulated lay days.

For liners and specialized (roll-on roll-off, RO-flow, container ships, LASH ships, refrigerated vessels), the demurrage (dispatch) rate is 200% (100%) of the vessel's dockside operational maintenance rate.

For settlements between port and shipping company involving foreign vessels (chartered by foreign firms and V/O Sovfrakht) the demurrage (dispatch) rate is 13 kopecks (6.5 kopecks) per gross register ton per day or prorated per portion of day over (under) the stipulated lay days.

A shipping company to which the port is subordinate will make settlements for foreign vessel handling with V/O Sovfrakht and with the all-union associations of the Ministry of Foreign Trade and the State Committee of Foreign Economic Relations.

For foreign vessels chartered for a voyage by V/O Sovfrakht, settlements will be made in a manner established by the Ministry of the Maritime Fleet and according to the conditions, norms and rates of demurrage (dispatch) stated in the charters. When chartering foreign tonnage, V/O Sovfrakht will specify in the charter the norms for loading and unloading vessels in Soviet ports in agreement with Glavflot of the Ministry of the Maritime Fleet.

Settlements for foreign vessels chartered by V/O Sovfrakht on time charter are made only between the shipping company and the ports subordinate to it.

For foreign vessels chartered by foreign firms before the new ship-handling norms were approved, the shipping company will settle with associations of the Ministry of the Maritime Fleet and the State Committee for Foreign Economic Affairs for the layover time of these vessels in accordance with the new Statute.

Calculations have shown that the introduction of the new statute for organizing the handling of the dry-cargo fleet will make significant savings possible. Thus, the rate of ship handling will increase by 8-10 percent, reducing dock time by 9 percent. The time spent by vessels waiting to be handled will be reduced by 4-5 percent, while the efficiency of the freight-handling complexes will increase by 4-6 percent.

This work is the first step in perfecting a normative-methodological base for organizing ship handling in port. The next step is to develop higher norms for handling tankers.

12595
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PORTS AND TRANSSHIPMENT CENTERS

RECENT IMPROVEMENTS AT BELGOROD-DNESTROVSKIY PORT

Moscow VODNYY TRANSPORT in Russian 1 Mar 84 p 1

[Interview with A. I. Tsaran, secretary of the party committee of the Belgorod-Dnestrovskiy port, by nonstaff correspondent B. Ustimenko in the column "Vodnyy Transport Interviews": "Gratifying Changes"; date and place not specified]

[Text] A seaport at the mouth of the Dnestr. It is also on labor watch in winter and lives at a precise pace day and night, just like 5 years ago. But it has changed in this period: new berths and cranes, structures and building sites have appeared.

I ask Aleksandr Ivanovich Tsaran, secretary of the party committee of the Belgorod-Dnestrovskiy commercial seaport, to describe the changes that have occurred here in the period between elections.

[Answer] The comparatively young collective of port workers has grown, became stronger and has enriched itself with experience. The party organization has increased by 30 people. The ranks of communists have been replenished with leading workers. Among them are city soviet deputies, including floating workshops electrician V. Belous and docker-machine operator A. Torbinskiy. Young communist P. Dombrovan became a brigadier. Young communist L. Yurchenko is heading a comprehensive financially self-supporting consolidated complex brigade. Communists are initiators of all good deeds.

[Question] The material and technical base of the port was strengthened during these years, what mechanisms have been adopted by the dockers?

[Answer] Berth No 7, which is 160 m long, was built. The port has received five new portal cranes and 34 forklift trucks. Technical equipping has not only helped in easing labor of dockers but also in increasing its productivity.

[Question] Has the technological process of cargo handling changed?

[Answer] New opportunities have opened the road to leading technology. The soda ash from Bulgaria now comes in soft packing instead of containers, return of which was mandatory. Canned goods come on pallets. The handling speed has increased considerably.

[Question] Have the cargo flows increased, has the variety of cargo expanded?

[Answer] The port began processing grain cargoes 2 years ago. A total of 450,000 t have already been processed at our berths. A pneumatic reloader, which transports grain according to the "hold-railcar" version, was installed and assembled on the berth. Its productivity is 300 t per hour.

Last year, we have begun an experiment whose essence is to unload the railroad by delivering lumber from the Don to the Dnestr and further by river into the interior of Moldavia with the help of seagoing and river vessels. Some 10,000 t of lumber was transported, which made it possible to release 250 railcars. The experiment provides great opportunities for transporting lumber from the Volga-Kama basin and metal from Zhdanov, Dnepropetrovsk and Zaporozhye. This will make it possible to shift railway and motor transportation of fraternal Moldavia to other types of deliveries.

In meeting the growing production requirements of the port, we undertook reorganization of brigades: one comprehensive financially self-supporting consolidated complex brigade was organized on the basis of seven complex brigades. The contract brigade method is now being introduced here.

[Question] What were the past 5 years marked by in the construction of sociocultural projects?

[Answer] The plan for social development is being fulfilled with confidence. On the new year's eve, 120 families of port workers moved into new dwellings, and in the first half of the year 30 more families will receive keys to apartments. The port has renovated a 90-place dining hall, opened a food store and seven medical workers are in attendance at the health center. We are now beginning construction of a sports area.

Concern for the people has yielded gratifying results. Every port worker strives to strengthen the country's economic and defensive might through his labor.

9817
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PORTS AND TRANSSHIPMENT CENTERS

OFF-SEASON, WINTER OPERATIONS AT KIEV PORT

Moscow VODNYY TRANSPORT in Russian 28 Feb 84 p 2

[Article by V. Panchuk, deputy chief of the Kiev port, in the column "Strengthen Cooperation of Subcontractors": "Winter Pace of the Port"]

[Text] The off-season period on the Dnepr lasts 3-4 months. Therefore, efficient use of material and labor resources during this time is of exceptionally important significance. What is the most acceptable way? In our Kiev port we proceed in two directions. First, precise interaction with subcontractors in processing transportation means and, second, shipping cargo in ice conditions. I will dwell briefly on each of these directions.

Interaction of related modes of transportation is conducted according to a jointly developed continuous plan-schedule of the Kiev-Petrovka station, the port and the motor enterprise 11175. It provides for efficient regulation of the railcar flow at the Kiev transportation center, first of all, for the transfer of the surplus pool of railcars from the city's stations to the port for processing.

Moreover, the rolling stock is transferred not when it is already unproductively idle while waiting for processing, but during planning of the following day's work and with consideration of the cargo stock, the approach of railcars and the station's traffic capacity. Thus, in winter the port acts as an affiliate of the Kiev-Petrovka station and contributes to raising the turnover rate of transportation means.

Cooperation during the off-season period with railwaymen is organized on the basis of a separate agreement, which is concluded annually by the port with the Kiev branch of the Southwestern Railroad and the Kiev City Production Administration of Cargo Motor Transportation Facilities [Kievgruzavtotrans]. It defines the volumes of work, indicates berths and precisely establishes consignees and consignors, fronts of simultaneous marshalling and railcar processing periods. Commercial questions and payments for loading and unloading operations performed by the port were not forgotten here. The most important is that the order of information on the time of marshalling of rolling stock was taken into consideration.

A total of 50 percent of portal cranes and small-scale mechanization is used in work with the railroad and motor transportation. What does this result in

Year after year, the Kiev port workers improve their winter fleet operation experience and increase the volume of shipments during the off-season period. Construction cargo is delivered in winter to local clients (motor transportation is used) as well as to non-local ones (railcars are used). These deliveries have made it possible not only to improve the use of the fleet and mechanization, but also to dispatch fully loaded railcars from the port and to organize rational use of motor transportation throughout the year.

At present, the excavation of sand from the river bottom is conducted with floating clamshell cranes. The same cranes are also used for loading on bunkerless vessels with a carrying capacity of 700 t and for unloading on berths. During the process of deliveries at subzero temperature, the vessels periodically undergo technical servicing. The holds are heated through with steam, which makes it possible to clean the frozen sand layer off the decks.

The following fact testifies to the advantage of using the port's fleet in winter: in the first quarter alone, the average monthly volumes of deliveries amounted to 40 percent of the navigation season's volume. Taking into account the rapid pace of construction and the annual growth in demand for construction materials, it can be concluded that year-round operation of the port's fleet is extremely promising. Initially, of course, it seemed that it creates great difficulties in organizing and conducting repairs of transshipping equipment and the fleet. However, accumulated experience provides a basis to assert quite the opposite. Narrow front repairs have made it possible to considerably reduce their cost. Moreover, they are being performed within the precisely established periods.

In planning the use of transshipping equipment by time periods of the year, the Kiev port is guided by the methods proposed by Candidate of Economic Sciences N. Slavov. Its essence consists in exact calculation of the number of mechanisms that can be used simultaneously in winter with mandatory repairs. If fulfillment of the assigned volume of work cannot be ensured in winter, a possibility is being studied of postponing repair periods to the initial or the final periods of the navigation season when the port is not fully loaded.

It remains to be added that by using the experience of Leningrad transportation workers, the port's efficient work in the off-season period ensures high stable earnings of the people throughout the year. Thereby, creating favorable conditions for retaining personnel.

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BRIEFS

SPECIALIZED CARGO COMPLEX--Odessa (TASS)--A specialized complex for the processing of loose cargo was built at the Odessa commercial port. The last pneumatic reloader was put into operation here. Now 300 railcars can be dispatched from the port to elevators daily. This is nearly 20,000 t of grain. From the holds of a motorship the grain is directly conveyed via a pipeline to a railcar with the aid of an air jet. Four pneumatic reloaders can handle two oceangoing vessels simultaneously. The complex was commissioned 2 months ahead of schedule. This will make it possible for the Odessa port workers to ship 150,000 t of grain above the plan this year. [Text] [Moscow VODNYY TRANSPORT in Russian 21 Feb 84 p 1] 9817

ICE EMBANKMENT IN KHATANGA--Khatanga (Krasnoyarsk Kray)--An unusual bay will help in protecting vessels from the powerful ice movement during spring floods. Its construction is nearing completion at the Khatanga arctic seaport. A part of the similarly named river near the port here was partitioned by an ice embankment of an impressive size: it is more than 200 m long, 30 m wide and 11 m high. It was built-up gradually from October last year, when steady frosts began in the transpolar area. Water is conveyed to slip forms on the embankment via special chutes, it freezes rapidly and after that the forms are raised by another 5 cm. This continued for several months until the man-made iceberg reached the required height. Dozens of vessels of the port's fleet will weather behind it in complete safety the stormy Taymyr ice movement in June. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 11 Mar 84 p 1] 9817

OSOVTSY RIVER PORT--Gomel--A new, modern river port, which will be named after the nearby village of Osovtsy, is being successfully built near Gomel. National economic cargo will be processed here on mechanized berths with an overall length of 140 linear meters. The plan provides for the construction of an embankment with the setting up in the borderline zone of crane mechanization, crane tracks, open storage areas and stacking galleries and trestles. Rear and reserve platforms and loading units will be located in the rear section. [By T. Sushchits] [Text] [Moscow VODNYY TRANSPORT in Russian 20 Mar 84 p 2] 9817

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